WHAT IS CLAIMED IS:

1. A method of making paper or paperboard comprising:

introducing fibrous cationic colloidal alumina microparticles to a papermaking pulp and introducing at least one polymer to said papermaking pulp, to form a treated pulp, said polymer comprising a cationic polymer, a nonionic polymer, or an amphoteric polymer under cationic conditions or combinations thereof; and

forming the treated pulp into paper or paperboard.

2. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles comprise a fibrous cationic acetate salt of boehmite alumina having a zeta potential of greater than about 25 and a weight ratio of aluminum to acetate of less than about 4.

3. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles comprise a cationic fibrous acetate salt of boehmite alumina.

4. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles contain from about 0.5% by weight to about 30% by weight Al_2O_3.

5. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles are added to said pulp in an amount of at least about 0.05 pound on a dry basis, per ton of pulp based on the dried solids weight of the pulp.

6. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles are added to said pulp in an amount of from about 0.3 pound to about 5.0 pounds on a dry basis, per ton of pulp based on the dried solids weight of the pulp.

7. The method of claim 1, wherein said cationic polymer is present and comprises a synthetic nitrogen-containing cationic polymer.

8. The method of claim 1, wherein said cationic polymer is present and comprises a cationic polyacrylamide.

9. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles are added to said papermaking pulp prior to introducing said polymer to said pulp.

10. The method of claim 1, wherein said fibrous cationic colloidal alumina microparticles and said polymer are introduced to said papermaking pulp at about the same time.

11. The method of claim 1, further comprising combining at least one cationic starch with said papermaking pulp prior to introducing said fibrous cationic colloidal alumina microparticles to said pulp.

12. The method of claim 1, wherein said pulp comprises a sulfite pulp.

13. The method of claim 9, wherein said polymer is a synthetic, water-soluble cationic polymer containing acrylamide units and cationic monomeric units.

14. The method of claim 1, further comprising adding at least one cellulytic enzyme to said pulp.

15. The method of claim 1, further comprising adding at least one cellulytic enzyme to said pulp before introducing said fibrous cationic colloidal alumina microparticles to said pulp.

16. A paper or paperboard made according to the method of claim 1.

17. A papermaking apparatus comprising a supply of fibrous cationic colloidal alumina microparticles, a supply of a papermaking pulp, a device for feeding fibrous cationic colloidal alumina microparticles from the supply of fibrous cationic colloidal alumina

microparticles to the supply of papermaking pulp, a supply of a retention system polymer, a device for feeding retention system polymer from the supply of retention system polymer to the pulp or treated pulp, and a device for forming the pulp into a paper or paperboard after treatment with said fibrous cationic colloidal alumina microparticles and said retention system polymer, wherein said retention system polymer is a cationic polymer, a nonionic polymer, or an amphoteric polymer under cationic conditions, or combinations thereof.

18. The apparatus of claim 17, wherein said device for forming the pulp comprises a blend chest in communication with said supply of treated pulp, a fan pump in communication with the blend chest, a screen in communication with said fan pump, and a head box in communication with said screen.

19. The apparatus of claim 18, wherein a supply tank is provided for holding a supply of the pulp, and the communication between said supply tank and said blend chest includes a refining apparatus for refining the pulp before entering the blend chest.

20. The apparatus of claim 18, further comprising a white water silo,

wherein said white water silo has an inlet in communication with said blend chest, an inlet in communication with said head box, and an outlet in communication with said fan pump.

21. The apparatus of claim 20, further comprising one or more refiners for refining the pulp prior to forming the pulp in said head box.

22. A paper or paperboard made from a drained paperweb, said paperweb comprising a treated pulp, said treated pulp comprising cellulosic fibers, fibrous cationic colloidal alumina microparticles, and at least one retention system polymer, said retention system polymer comprising a cationic polymer, a nonionic polymer, or an amphoteric

polymer under cationic conditions, or combinations thereof.

23. The paper or paperboard of claim 22, wherein said fibrous cationic colloidal alumina microparticles comprise a fibrous cationic acetate salt of boehmite alumina having a zeta potential of greater than about 25 and a weight ratio of aluminum to acetate of less than about 4.